



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/758,078	01/10/2001	David C. Brown	OSPD91-US	7128

24222 7590 04/18/2003

MAINE & ASMUS
100 MAIN STREET
P O BOX 3445
NASHUA, NH 03061-3445

[REDACTED] EXAMINER

PEREZ, GUILLERMO

[REDACTED] ART UNIT [REDACTED] PAPER NUMBER

2834

DATE MAILED: 04/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/758,078	BROWN, DAVID C.
	Examiner	Art Unit
	Guillermo Perez	2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 11 March 2003.

2a) This action is **FINAL**. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 5,7-13 and 15-23 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 5,7-13 and 15-23 is/are rejected.

7) Claim(s) _____ is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) The proposed drawing correction filed on _____ is: a) approved b) disapproved by the Examiner.
 If approved, corrected drawings are required in reply to this Office action.

12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
 * See the attached detailed Office action for a list of the certified copies not received.

14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
 a) The translation of the foreign language provisional application has been received.

15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) Notice of References Cited (PTO-892) 4) Interview Summary (PTO-413) Paper No(s). 0303.
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) Notice of Informal Patent Application (PTO-152)
 3) Information Disclosure Statement(s) (PTO-1449) Paper No(s) 0403. 6) Other:

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on March 11, 2003 has been entered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 5, 7-9, 12, 15-16, and 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over M. V. Braunagel (U. S. Pat. 3,178,241) in view of Stangeland (U. S. Pat. 5,112,146).

M. V. Braunagel discloses a rotatable shaft supported by non-lubricated all ceramic ball bearing assemblies, each ceramic bearing assembly comprising:

- a ceramic inner race (10),
- ceramic bearing balls (column 1, lines 63-68), and
- a ceramic outer race (12),

the bearing assemblies are supported by a bearing support structure (14). M. V. Braunagel discloses that the shaft is electrically isolated from the bearing support structure (column 3, lines 43-49).

However, M. V. Braunagel does not disclose that the races are ellipsoidal the shaft and the bearing support structure have substantially the same coefficient of thermal expansion as the ceramic bearing assemblies.

Stangeland discloses that the races (12,16) are ellipsoidal (A geometric surface, all of whose plane sections are either ellipses or circles. *The American Heritage® Dictionary of the English Language, Third Edition* copyright © 1992 by Houghton Mifflin Company). Stangeland discloses that the shaft (32) and the bearing support structure (34) have substantially the same coefficient of thermal expansion as the ceramic bearing assemblies (column 2, lines 5-9). Stangeland's invention has the purpose of avoiding the components from becoming loosened due to thermal deformation.

It would have been obvious at the time the invention was made to modify the bearing assemblies of M. V. Braunagel and provide it with the shape and thermal expansion matching disclosed by Stangeland for the purpose of avoiding the components from becoming loosened due to thermal deformation.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the shaft and the bearing support structure of a nickel-iron alloy since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the bearings in a galvanometer scanner since it has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. *Ex parte Masham*, 2 USPQ2d 1647 (1987).

2. Claims 10-11, 13, 17, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Plesko in view of M. V. Brunagel in view of Stangeland.

Plesko discloses a partial-rotation torque motor comprising:
a reversibly rotatable shaft (17) rotationally restricted to less than one full turn, and
a stator (35) and housing assembly (25) within which the shaft (17) is located,
the shaft (17) is supported by ball bearing assemblies (87).

However, Plesko does not disclose that each assembly includes:

- an ellipsoidal ceramic inner race mounted on the rotatable shaft and
- an ellipsoidal ceramic outer race mounted in the housing and
- multiple ceramic bearing balls interspersed there between.

Plesko does not disclose that the shaft, the stator, and the housing assembly are fabricated of a nickel-iron alloy of matched thermal expansion to the all-ceramic bearing assemblies. Plesko does not disclose that the shaft being electrically isolated from the stator and the housing.

M. V. Braunagel discloses that each assembly includes:

- a ceramic inner race (10) mounted on the rotatable shaft, and
- a ceramic outer race (12), and
- multiple ceramic bearing balls (column 1, lines 63-68) interspersed there between.

M. V. Braunagel discloses that the shaft is electrically isolated from the bearing support structure (column 3, lines 43-49). Braunagel's invention has the purpose of enabling the operation even with a large electrical potential difference between the drive shaft and the housing.

Stangeland discloses that the races (12,16) are ellipsoidal. Stangeland discloses that the shaft (32), the stator, and the housing assembly are fabricated of a material of matched thermal expansion to the all-ceramic bearing assemblies (column 2, lines 5-9). Stangeland's invention has the purpose of avoiding the components from becoming loosened due to thermal deformation.

It would have been obvious at the time the invention was made to modify the torque motor of Plesko and provide it with the bearings material, shape, and insulation disclosed by M. V. Braunagel and Stangeland for the purpose of enable the operation with a large electrical potential difference between the drive shaft and the housing and avoiding the components from becoming loosened due to thermal deformation.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the shaft, the housing, and the bearing support structure of a nickel-iron alloy since it has been held to be within the general skill of a worker in the

art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the bearings in a galvanometer scanner since it has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. *Ex parte Masham*, 2 USPQ2d 1647 (1987).

3. Claims 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over M. V. Braunagel in view of Stangeland as applied to claims 12 and 18 above, and further in view of Yonei (U. S. Pat. 5,214,326).

M. V. Braunagel and Stangeland substantially teaches the claimed invention except that it does not show that the outer race is attached by a glue joint to the bearing support structure, the inner race being attached by a glue joint to the shaft.

Yonei discloses that the outer race (118) is attached by glue joint (column 7, lines 9-12) to the bearing support structure (106), the inner race (119) is attached by a glue joint to the shaft (134). Yonei's invention has the purpose of securing the bearing assembly in place.

It would have been obvious at the time the invention was made to modify the bearing assembly of M. V. Braunagel and Stangeland and provide it with the fixing structure disclosed by Yonei for the purpose of securing the bearing assembly in place.

Response to Arguments

Applicant's arguments with respect to claims 5, 7-13, and 15-23 have been considered but are moot in view of the new ground(s) of rejection.

In response to Applicant's remark that Braunagel is directed to roller bearings, it was found that Braunagel is also disclosing all ceramic ball bearings in column 1, lines 63-68, as claimed.

Regarding Applicant's remark that Stangeland disclose less than fully ellipsoidal race surfaces, it was found that the definition of ellipsoidal (A geometric surface, all of whose plane sections are either ellipses or circles. *The American Heritage® Dictionary of the English Language, Third Edition* copyright © 1992 by Houghton Mifflin Company) is shown in figure 1 of Stangeland. It is the first time this definition is considered.

In response to applicant's argument that the references are not related to its use in galvanometers, a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963).

In response to applicant's arguments, the recitation "a galvanometer scanner" has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190

Application/Control Number: 09/758,078
Art Unit: 2834

Page 8

USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

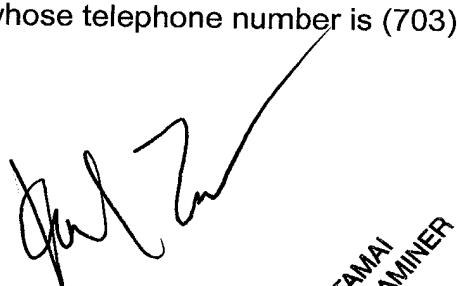
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Guillermo Perez whose telephone number is (703) 306-5443. The examiner can normally be reached on Monday through Thursday and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on (703) 308 1371. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305 3432 for regular communications and (703) 305 3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308 0956.

Guillermo Perez
Tuesday, April 08, 2003



KARL TAMAI
PRIMARY EXAMINER